The documentation process conversion measures necessary to comply with this revision shall be completed by 31 November 1998

INCH-POUND

MIL-PRF-19500/396E
31 August 1998
SUPERSEDING
MIL-S-19500/396D
30 December 1993

PERFORMANCE SPECIFICATION SHEET
SEMICONDUCTOR DEVICE, TRANSISTOR, PNP, SILICON, SWITCHING
TYPES 2N3762, 2N3762L, 2N3763, 2N3763L, 2N3764, AND 2N3765
JAN, JANTX, JANTXV, AND JANS

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the performance requirements for PNP silicon switching transistors. Four levels of product assurance is provided for each device type as specified in MIL-PRF-19500.

1.2 Physical dimensions. See figure 1 (similar to TO-5, TO-39, and TO - 46).

1.3 Maximum ratings.

Types	P_T T_A = +25°C	V_{CBO}	V_{CEO}	V_{EBO}	I_C	T_{OP} and T_{STG}	$R_{\theta JC}$
	W	V dc	V dc	V dc	A dc	°C	°C/W
2N3762	1.0 1/	40	40	5	1.5	-55 to +200	60
2N3762L	1.0 1/	40	40	5	1.5	-55 to +200	60
2N3763	1.0 1/	60	60	5	1.5	-55 to +200	60
2N3763L	1.0 1/	60	60	5	1.5	-55 to +200	60
2N3764	0.5 2/	40	40	5	1.5	-55 to +200	88
2N3765	0.5 2/	60	60	5	1.5	-55 to +200	88

1/ Derate linearly at 5.71 mW/°C above T_A = +25°C.
2/ Derate linearly at 2.86 mW/°C above T_A = +25°C.

1.4 Primary electrical characteristics T_A = +25°C. (Unless otherwise indicated, applies to all devices.)

Limits	h_{FE1} V_{CE} = 1.0 V dc; I_C = 10 mA dc	h_{FE3} V_{CE} = 1.0 V dc; I_C = 500 mA dc	h_{FE5} 1/ V_{CE} = 5.0 V dc; I_C = 1.5 A dc	
			2N3762 2N3762L 2N3764	2N3763 2N3763L 2N3765
Min	35	40	30	20
Max		140		

1/ Pulsed (see 4.5.1).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Defense Supply Center Columbus, ATTN: DSCC-VAT, 3990 East Broad Street, Columbus, OH 43216-5000, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

1.4 Primary electrical characteristics T_A = +25°C. (Unless otherwise indicated, applies to all devices.) - Continued.

Limits	$\|h_{FE}\|$ f = 100 MHz V_{CE} = 10 V dc I_C = 50 mA dc		$V_{CE(SAT)3}$ I_C = 500 mA dc I_B = 50 mA dc 1/	C_{obo} V_{CE} = 10 V dc I_E = 0 100 kHz ≤ f ≤ 1 MHz	Pulse response			
					See fig.1		See fig.2	
	2N3762 2N3764	2N3763 2N3765	V dc	pF	t_d ns	t_r ns	t_s ns	t_f ns
Min	1.8	1.5						
Max	6.0	6.0	0.5	25	8	35	80	35

1/ Pulsed (see 4.5.1).

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATION

DEPARTMENT OF DEFENSE

MIL-PRF-19500 - Semiconductor Devices, General Specification for.

STANDARD

MILITARY

MIL-STD-750 - Test Methods for Semiconductor Devices.

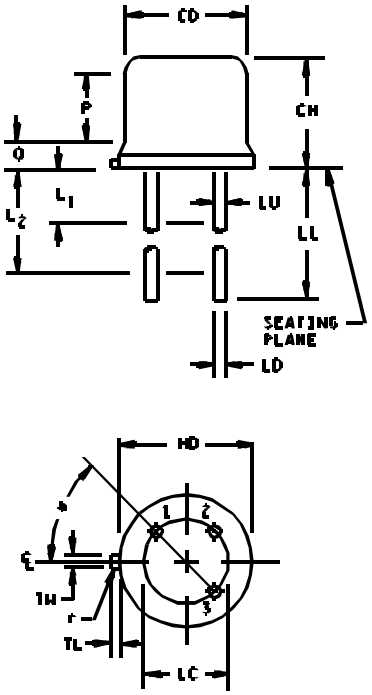
(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related associated specifications or specification sheets), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Qualification. Devices furnished under this specification shall be products that are authorized by the qualifying activity for listing on the applicable qualified products list before contract award (see 4.2 and 6.4).

3.2 Associated specification. The individual item requirements shall be in accordance with MIL-PRF-19500 and as specified herein.



Symbol	TO-39		TO-5		TO-46		Notes
	Min	Max	Min	Max	Min	Max	
CD	.305	.355	.305	.355	.178	.195	
CH	.240	.260	.240	.260	.170	.210	
HD	.355	.370	.355	.370	.209	.230	
LC	.200 TP		.200 TP		.100 TP		6
LD	.016	.021	.016	.021	.016	.021	7
LL	1.500	1.750	.500	.750	1.500	1.50	7
LU	.016	.019	.016	.019	.016	.019	7
L1		.050		.050		.050	7
L2	.250		.250		.250		7
TL	.029	.045	.029	.045	.028	.048	3
TW	.028	.034	.028	.034	.036	.046	10
P	.100		.100		.100		5
Q		.040		.040		.040	4
r		.010		.010		.007	11
a	45° TP		45° TP		45° TP		6
Notes	1, 2, 8, 9		1, 2, 8, 9		1, 2, 8, 9		

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Symbol TL is measured from HD maximum.
4. Details of outline in this zone are optional.
5. Symbol CD shall not vary more than .010 (0.25 mm) in zone P. This zone is controlled for automatic handling.
6. Leads at gauge plane .054 inch (1.37 mm) +.001 inch (0.03 mm) -.000 inch (0.00 mm) below seating plane shall be within .007 inch (0.18 mm) radius of true position (TP) relative to tab. Device may be measured by direct methods or by gauge.
7. Symbol LD applies between L_1 and L_2. Dimension LD applies between L_2 and LL minimum.
8. Lead designation, depending on device type, shall be as follows:

Lead number	TO-39 2N3762L 2N3763L	TO-5 2N3762 2N3763	TO-46 2N3764 2N3765
1	Emitter	Emitter	Emitter
2	Base	Base	Base
3	Collector	Collector	Collector

9. Lead number three is electrically connected to case.
10. Beyond r maximum, TW shall be held for a minimum length of .011 inch (0.28 mm).
11. Symbol r applied to both inside corners of tab.

FIGURE 1. Physical dimensions (similar to TO-5, TO-39, and TO-46).

3.3 Abbreviations, symbols, and definitions. Abbreviations, symbols, and definitions used herein shall be as specified in MIL-PRF-19500.

3.4 Interface requirements and physical dimensions. The interface requirements and physical dimensions shall be as specified in MIL-PRF-19500 and on figure 1 (similar to TO-5, TO-39, and TO-46) herein.

3.4.1 Lead finish. Unless otherwise specified, lead finish shall be solderable in accordance with MIL-STD-750, MIL-PRF-19500, and herein.

3.5 Marking. Devices shall be marked in accordance with MIL-PRF-19500.

3.6 Electrical performance characteristics. Unless otherwise specified, the electrical performance characteristics are as specified in 1.3, 1.4, and table I herein.

3.7 Electrical test requirements. The electrical test requirements shall be the subgroups specified in 4.4.2 and 4.4.3 herein.

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. Qualification inspection (see 4.2).

b. Screening (see 4.3).

c. Conformance inspection (see 4.4).

4.2 Qualification inspection. Qualification inspection shall be in accordance with MIL-PRF-19500 and 6.3 herein.

4.3 Screening (JANS, JANTX, and JANTXV levels only). Screening shall be in accordance with MIL-PRF-19500 (appendix E, table IV), and as specified herein. The following measurements shall be made in accordance with table I herein. Devices that exceed the limits of table I herein shall not be acceptable.

Screen (see appendix E of MIL-PRF-19500	Measurements	
	JANS level	JANTX and JANTXV levels
3c	Thermal impedance (see 4.3.2)	Thermal impedance (see 4.3.2)
9	I_{CBO2} and h_{FE3}	Not applicable
11	I_{CBO2}; h_{FE3}, ΔI_{CBO2} = 100 percent of initial value or10 nA dc whichever is greater; Δh_{FE3}= ±15 percent	I_{CBO2} and h_{FE3}
12	See 4.3.1	See 4.3.1
13	Subgroups 2 and 3 of table I herein; ΔI_{CBO2} = 100 percent of initial value or 10 nA dc, whichever is greater; Δh_{FE3} = ± 15 percent	Subgroup 2 of table I herein; ΔI_{CBO2} = 100 percent of initial value or 10 nA dc, whichever is greater; Δh_{FE3} = ± 15 percent.

4.3.1 Power burn-in conditions. Power burn-in conditions are as follows:

T_A = Room ambient as defined in the general requirements of MIL-STD-750 (all product assurance levels);

JANS level:		JANTX and JANTXV levels			
V_{CB} = 10 V dc; P_T = 1.0 W	V_{CB} = 10 V dc; P_T = 0.5 W	V_{CB} = 30 V dc; P_T = 1.0 W	V_{CB} = 40 V dc; P_T = 1.0 W	V_{CB} = 30 V dc; P_T = 0.5 W	V_{CB} = 40 V dc; P_T = 0.5 W
2N3762, 2N3763	2N3764, 2N3765	2N3762	2N3763	2N3764	2N3765

NOTE: No heat sink or forced air cooling on the devices shall be permitted. Power burn-in conditions for "L" suffix devices are identical to their corresponding non-L suffix devices.

4.3.2 Thermal impedance ($Z_{\theta JX}$ measurements). The $Z_{\theta JX}$ measurements shall be performed in accordance with MIL-STD-750, Method 3131.

a. I_M measurement current ..... 5 mA.

b. I_H forward heating current ..... 200 mA (minimum).

c. t_H heating time ..... 25 - 30 ms.

d. t_{md} measurement delay time..... 60 µs maximum.

e. V_{CE} collector-emitter voltage ..... 10 V dc

The maximum limit for $Z_{\theta JX}$ under these test conditions are :

$Z_{\theta JX}$ (max) (2N3762, L, 2N3763, L = 60°C/W.

$Z_{\theta JX}$ (max) (2N3764, L, 2N3765, L = 88°C/W.

4.4 Conformance inspection. Conformance inspection shall be in accordance with MIL-PRF-19500 and as specified herein. If alternate screening is being performed in accordance with MIL-PRF-19500, a sample of screened devices shall be submitted to and pass the requirements of group A1 and group A2 inspection only (table VIb, group B, subgroup 1 is not required to be performed again if group B has already been satisfied in accordance with 4.4.2 herein).

4.4.1 Group A inspection. Group A inspection shall be conducted in accordance with table V of MIL-PRF-19500 and table I herein.

4.4.2 Group B inspection. Group B inspection shall be conducted in accordance with the conditions specified for subgroup testing in table VIa (JANS) of MIL-PRF-19500 and 4.4.2.1 herein. Electrical measurements (end-points) and delta requirements shall be in accordance with group A, subgroup 2 and 4.5.3 herein. See 4.4.2.2 for JAN, JANTX, and JANTXV group B testing. Electrical measurements (end-points) and delta requirements for JAN, JANTX, and JANTXV shall be after each step in 4.4.2.2 and shall be in accordance with group A, subgroup 2 and 4.5.3 herein.

4.4.2.1 Group B inspection, table VIa (JANS) of MIL-PRF-19500.

Subgroup	Method	Conditions
B3	2037	Test condition A.
B4	1037	2N3762, 2N3762L - V_{CB} = 10 V dc, P_T = 1.0 W (for 2N3762, 2N3762L, 2N3763, and 2N3763L), P_T = 0.5 W (for 2N3764 and 2N3765) at T_A = Room ambient as defined in the general requirements of MIL-STD-750. $t_{on} = t_{off}$ = 3 minutes minimum for 2,000 cycles. No heat sink or forced-air cooling on devices shall be permitted.
B5	1027	V_{CB} = 10 V dc, P_T = 1.0 W (for 2N3762, 2N3762L, 2N3763, and 2N3763L), P_T = 0.5 W (for 2N3764 and 2N3765) at T_A = +125°C ± 25°C for 96 hours or T_A = +100°C for 96 hours with P_T adjusted as required by the chosen T_A to give an average lot. T_J = +275°C. Marking legibility requirements shall not apply.

4.4.2.2 Group B inspection, table VIb (JAN, JANTX, and JANTXV) of MIL-PRF-19500. 1/

Step	Method	Condition
1	1039	Steady-state life: Test condition B, 340 hours, V_{CB} = 10 V dc, (for 2N3762, 2N3762L, 2N3763, and 2N3763L), (for 2N3764 and 2N3765), T_J = +150°C minimum. No heat sink or forced- air cooling on devices shall be permitted. n = 45, C = 0.
2	1039	The steady-state life test of step 1 shall be extended to 1,000 hours for each die design. Samples shall be selected from a wafer lot every twelve months of wafer production. Group B step 2 shall not be required more than once for any single wafer lot. N = 45, C = 0.
3	1032	High- temperature life (non operating), T_A = +200°C, t = 340 hours, n = 22, C = 0.

1/ Separate samples may be used for each step. In the event of a group B failure, the manufacturer may pull a new sample at double size from either the failed assembly lot or from another assembly lot from the same wafer lot. If the new “assembly lot” option is exercised, the failed assembly lot shall be scrapped.

4.4.2.3 Group B sample selection. Samples selected from group B inspection shall meet all of the following requirements.:

a. For JAN, JANTX, and JANTXV samples shall be selected randomly from a minimum of three wafers (or from each wafer in the lot) from each wafer lot. For JANS, samples shall be selected from each inspection lot. See MIL-PRF-19500.

b. Must be chosen from an inspection lot that has been submitted to and passed group A, subgroup 2, conformance inspection. When the final lead finish is solder or any plating prone to oxidation at high temperature, the samples for life test (subgroups B4 and B5 for JANS, and group B for JAN, JANTX, and JANTXV) may be pulled prior to the application of final lead finish.

4.4.3 Group C inspection. Group C inspection shall be conducted in accordance with the conditions specified for subgroup testing in table VII of MIL-PRF-19500, and in 4.4.3.1 (JANS).and 4.4.3.2 (JAN, JANTX, and JANTXV) herein for group C testing. Electrical measurements (end points) and delta requirements shall be in accordance with group A, subgroup 2 and 4.5.3 herein.

4.4.3.1 Group C inspection, table VII (JANS) of MIL-PRF-19500.

Subgroup	Method	Condition
C2	2036	Test condition E.
C6	1026	2N3762, 2N3762L - V_{CB} = 30 V dc; P_T = 1.0 W at T_J = +150°C minimum. 2N3763, 2N3763L - V_{CB} = 40 V dc; P_T = 1.0 W at T_J = +150°C minimum. 2N3764 - V_{CB} = 30 V dc; P_T = 0.5 W at T_J = +150°C minimum. 2N3765 - V_{CB} = 40 V dc; P_T = 0.5 W at T_J = +150°C minimum. No heat sink or forced-air cooling on the devices shall be permitted.

4.4.3 2 Group C inspection, table VII (JAN, JANTX, and JANTXV) of MIL-PRF-19500.

Subgroup	Method	Condition
C2	2036	Test condition E.
C6	1026	Not applicable

4.4.3.3 Group C sample selection. Samples for subgroups in group C shall be chosen at random from any inspection lot containing the intended package type and lead finish procured to the same specification which is submitted to and passes group A tests for conformance inspection. Testing of a subgroup using a single device type enclosed in the intended package type shall be considered as complying with the requirements for that subgroup.

4.4.4 Group E inspection. Group E inspection shall be performed for qualification or requalification only. The tests specified in table II herein must be performed to maintain qualification.

4.5 Method of inspection. Methods of inspection shall be as specified in the appropriate tables and as follows.

4.5.1 Pulse measurements. Conditions for pulse measurement shall be as specified in section 4 of MIL-STD-750.

4.5.2 Delta requirements. Delta requirements shall be as specified below:

Step	Inspection	MIL-STD-750		Symbol	Limit
		Method	Conditions		
1	Collector-base cutoff current 2N3762, L; 2N3764 2N3763, L; 2N3765	3036	Bias condition D V_{CB} = 20 V dc V_{CB} = 30 V dc	ΔI_{CB02} 1/	100 percent of initial value or ± 10 nA dc, whichever is greater.
2	Forward current transfer ratio	3076	V_{CE} = 10 V dc; I_C = 1.0 mA dc; pulsed see 4.5.1	Δh_{FE2} 1/	± 25 percent change from initial reading.
3	Collector to emitter voltage (saturated)	3071	I_C = 500 mA dc; I_B = 50 mA dc; pulsed (see 4.5.1)	$\Delta V_{CE(SAT)3}$ 2/	± 50 mV dc change from previous measured value

1/ Devices which exceed the group A limits for this test shall not be accepted.
2/ Applies to JANS only.

TABLE I. Group A inspection.

Inspection 1/	MIL-STD-750		Symbol	Limit		Unit
	Method	Conditions		Min	Max	
Subgroup 1 2/						
Visual and mechanical inspection 3/	2071	n = 45 devices, c = 0				
Solderability 3/ 5/	2026	n = 15 leads, c = 0				
Resistance to solvents 3/ 4/ 5/	1022	n = 15 devices, c = 0				
Temp cycling 3/ 5/	1051	Test condition C, 25 cycles. n = 22 devices, c = 0				
Heremetic seal 5/ Fine leak Gross leak	1071	n = 22 devices, c = 0				
Electrical measurements 5/		Group A, subgroup 2				
Bond strength 3/ 5/	2037	Precondition T_A = + 250°C at t = 24 hours or T_A = + 300°C at t = 2 hours n = 11 wires, c = 0				
Subgroup 2						
Collector to base, cutoff current 2N3762, 2N3764 2N3763, 2N3765	3036	V_{CB} = 40 V dc V_{CB} = 60 V dc	I_{CBO1}		10	µA dc
Emitter to base, cutoff current 2N3762, 2N3764 2N3763, 2N3765	3061	V_{EB} = 5 V dc	I_{EBO1}		10	µA dc
Breakdown voltage collector to emitter	3011	Bias condition D; I_C = 10 µA dc	$V_{(BR)CEO}$	5		V dc
Collector to base cutoff current 2N3762, 2N3764 2N3763, 2N3765	3036	Bias condition D; V_{CB} = 20 V dc V_{CB} = 30 V dc	I_{CBO2}		100	nA dc
Collector to emitter cutoff current 2N3762, 2N3764 2N3763, 2N3765	3041	Bias condition A; V_{EB} = 2.0 V dc; V_{CE} = 20 V dc V_{CE} = 30 V dc	I_{CEX1}		100	nA dc

See footnotes at end of table.

TABLE I. Group A inspection - Continued.

Inspection 1/	MIL-STD-750		Symbol	Limit		Unit
	Method	Conditions		Min	Max	
Subgroup 2 - Continued.	3061	Bias condition D; V_{EB} = 2.0 V dc	I_{EBO2}		200	nA dc
Emitter to base cutoff current						
Forward - current transfer ratio	3076	V_{CE} = 1.0 V dc; I_C = 10 mA dc	h_{FE1}	35		
Forward - current transfer ratio	3076	V_{CE} = 1.0 V dc; I_C = 150 mA dc; pulsed (see 4.5.1)	h_{FE2}	40		
Forward - current transfer ratio	3076	V_{CE} = 1.0 V dc; I_C = 500 mA dc; pulsed (see 4.5.1)	h_{FE3}	40	140	
Forward - current transfer ratio	3076	V_{CE} = 1.5 V dc; I_C = 1.0 A dc; pulsed (see 4.5.1)	h_{FE4}			
2N3762, 2N3764 2N3763, 2N3765				30 20	120 80	
Forward - current transfer ratio	3076	V_{CE} = 5.0 V dc; I_C = 1.5 A dc; pulsed (see 4.5.1)	h_{FE5}			
2N3762, 2N3764 2N3763, 2N3765				30 20		
Collector to emitter voltage (saturated)	3071	I_C = 10 mA dc; I_B = 1 mA dc; pulsed (see 4.5.1)	$V_{CE(SAT)1}$		0.10	V dc
Collector to emitter voltage (saturated)	3071	I_C = 150 mA dc; I_B = 15 mA dc; pulsed (see 4.5.1)	$V_{CE(SAT)2}$		0.22	V dc
Collector to emitter voltage (saturated)	3071	I_C = 500 mA dc; I_B = 50 mA dc; pulsed (see 4.5.1)	$V_{CE(SAT)3}$		0.50	V dc
Collector to emitter voltage (saturated)	3071	I_C = 1.0 A dc; I_B = 100 mA dc; pulsed (see 4.5.1)	$V_{CE(SAT)4}$		0.90	V dc
Base to emitter voltage (saturated)	3066	Test condition A; I_C = 10 mA dc; I_B = 1 mA dc	$V_{BE(SAT)1}$		0.80	V dc
Base to emitter voltage (saturated)	3066	Test condition A; I_C = 150 mA dc; I_B = 15 mA dc; pulsed (see 4.5.1)	$V_{BE(SAT)2}$		1.0	V dc

See footnote at end of table.

TABLE I. Group A inspection - Continued.

Inspection 1/	MIL-STD-750		Symbol	Limit		Unit
	Method	Conditions		Min	Max	
Subgroup 2 - Continued.						
Base to emitter voltage (saturated)	3066	Test condition A; I_C = 500 mA dc; I_B = 50 mA dc Pulsed (see 4.5.1)	$V_{BE(SAT)3}$		1.2	V dc
Base to emitter voltage (saturated)	3066	Test condition A; I_C = 1.0 A dc; I_B = 100 mA dc Pulsed (see 4.5.1)	$V_{BE(SAT)4}$	.90	1.40	V dc
Subgroup 3						
High - temperature operation		T_A = +150°C				
Collector to emitter cutoff current 2N3762, 2N3764 2N3763, 2N3765		Bias condition A; V_{EB} = 2 V dc; V_{CE} = 20 V dc; V_{CE} = 30 V dc	I_{CEX2}		150	µA dc
Low - temperature operation		T_A = -55°C				
Forward - current transfer ratio	3076	V_{CE} = 1.0 V dc; I_C = 500 mA dc; Pulsed (see 4.5.1)	h_{FE6}	20		
Subgroup 4						
Magnitude of common emitter, small - signal short - circuit forward - current transfer ratio	3306	V_{CE} = 10 V dc; I_C = 50 mA dc; f = 100 MHz	$\|h_{fe}\|$			
2N3762, 2N3764 2N3763, 2N3765				1.8 1.5	6.0 6.0	
Open circuit output capacitance	3236	V_{CB} = 10 V dc; I_E = 0; 100 kHz ≤ f ≤ 1 MHz	C_{obo}		25	pF
Input capacitance (output open - circuited)	3240	V_{EB} = .5 V dc; I_C = 0; 100 kHz ≤ f ≤ 1 MHz	C_{ibo}		80	pF
Pulse response						
Pulse delay time	3251	See figure 1	t_d		8	ns
Pulse rise time	3251	See figure 1	t_r		35	ns
Pulse storage time	3251	See figure 2	t_s		80	ns
Pulse fall time	3251	See figure 2	t_f		35	ns

See footnote at end of table.

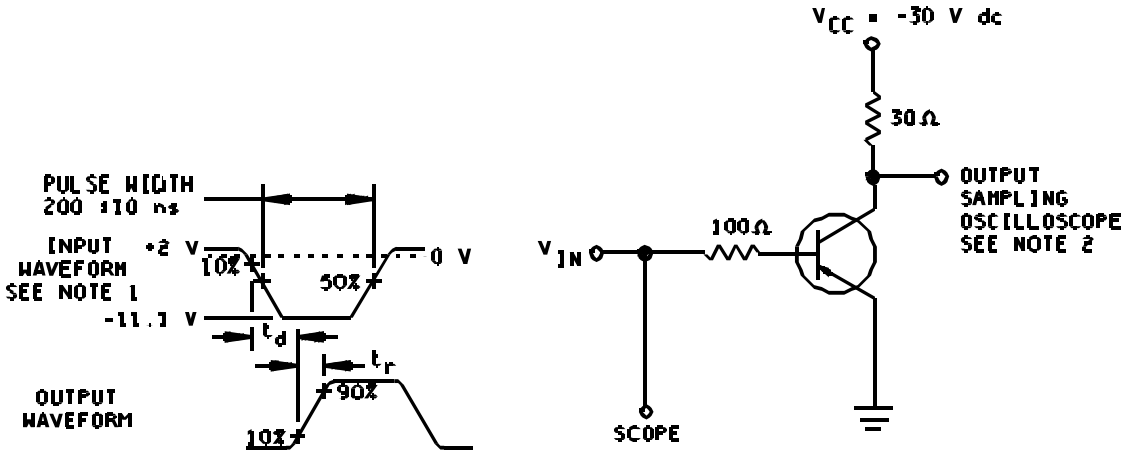
TABLE I. Group A inspection - Continued.

Inspection 1/	MIL-STD-750		Symbol	Limit		Unit
	Method	Conditions		Min	Max	
Subgroups 5 and 6 Not applicable Subgroups 7 Decap internal visual (design verification)	2075	n = 1 device, c = 0				

1/ For sampling plan, see MIL-PRF-19500. Electrical characteristics for "L" suffix devices are identical to their corresponding non- suffix devices.
2/ For resubmission of failed subgroup A1, double the sample size of the failed test or sequence of tests. A failure in group A, subgroup 1 shall not require retest of the entire subgroup. Only the failed test shall be rerun upon submission.
3/ Separate samples may be used.
4/ Not required for laser marked devices.
5/ Not required for JANS devices.

TABLE II. Group E inspection (all quality levels) - For qualification only

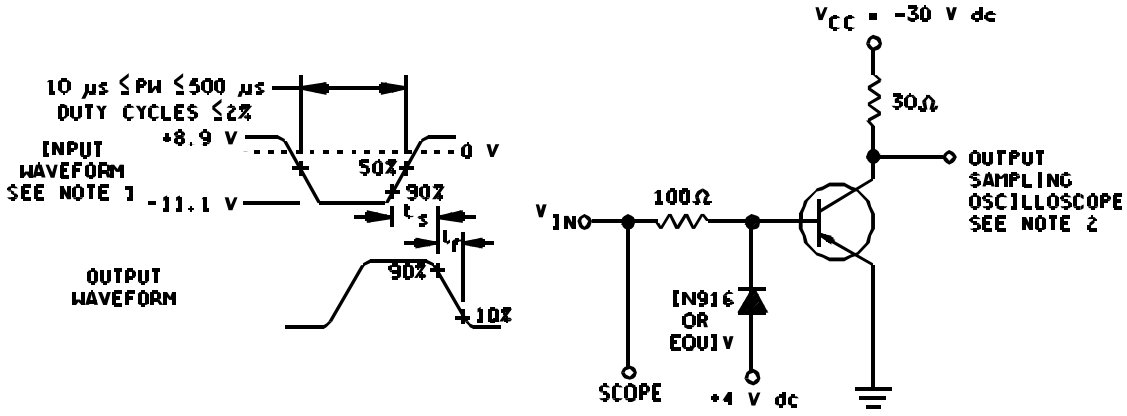
Inspection	MIL-STD-750		Qualification
	Method	Conditions	
Subgroup 1			12 devices c = 0
Temperature cycling (air to air)	1051	Test condition C, 500 cycles	
Hermetic seal	1071		
Fine leak Gross leak			
Electrical measurements		See group A, subgroup 2 and 4.5.3 herein.	
Subgroup 2			45 devices c = 0
Intermittent life	1037	Intermittent operation life: V_{CB} = 10 V dc , 6,000 cycles,) T_J $ +100EC; forced air cooling allowed on cooling cycle only.	
Electrical measurements		See group A, subgroup 2 and 4.5.3 herein.	
Subgroup 3			
Not applicable			
Subgroup 4			
Not applicable			
Subgroup 5			
Not applicable			



NOTES:

1. The rise time (t_r) of the applied pulse shall be ≤ 2 ns, duty cycle ≤ 2 percent, and the generator source impedance shall be 50Ω.
2. Sampling oscilloscope: Z_{in} ≥ 100 kΩ, C_{in} ≤ 12 pF, rise time ≤ .1 ns.
3. I_{B1} = -100 mA dc.

FIGURE 1. Pulse response test circuit for t_d and t_f.



NOTES:

1. The rise time (t_r) of the applied pulse shall be ≤ 2 ns, duty cycle ≤ 2 percent, and the generator source impedance shall be 50Ω.
2. Sampling oscilloscope: Z_{in} ≥ 100 kΩ, C_{in} ≤ 12 pF, rise time ≤ .1 ns.
3. I_{B1} = +I_{B2} = -100 mA dc.

FIGURE 2. Pulse response test circuit for t_s and t_f.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of material is to be performed byDoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Points' packaging activity within the Military Department or Defense Agency, or within the Military Departments' System Command. Packaging data retrieval is available from the managing Military Departments' or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

5.2 Marking. Unless otherwise specified (see 6.2), marking shall be in accordance with MIL-PRF-19500.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Notes. The notes specified in MIL-PRF-19500 are applicable to this specification.

6.2 Acquisition requirements. See MIL- PRF-19500.

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Products List QPL No.19500 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from Defense Supply Center Columbus, ATTN: DSCC-VQE, 3990 East Broad Street, Columbus, OH 43216-5000.

6.4 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Custodians:
Army - CR
Navy - EC
Air Force - 17
NASA - NA

Review activities:
Army - MI
Navy - AS, CG, MC
Air Force - 19, 85, 99

Preparing activity:
DLA - CC

(Project 5961-2049-02)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.

2. The submitter of this form must complete blocks 4, 5, 6, and 7.

3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	**1. DOCUMENT NUMBER** MIL-PRF-19500/396E	**2. DOCUMENT DATE (YYMMDD)** 980831

3. DOCUMENT TITLE SEMICONDUCTOR DEVICE, TRANSISTOR, PNP, SILICON, SWITCHING TYPES 2N3762, 2N3762L, 2N3763, 2N3763L, 2N3764, AND 2N3765 JAN, JANTX, JANTXV, AND JANS

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle initial)	b. ORGANIZATION	
c. ADDRESS (Include Zip Code)	d. TELEPHONE (Include Area Code) Commercial DSN FAX EMAIL	7. DATE SUBMITTED (YYMMDD)

8. PREPARING ACTIVITY

a. Point of contact: Alan Barone	b. TELEPHONE Commercial: 614-692-0510 DSN: 850-0510 FAX: 614-692-6939 EMAIL: alan_barone@dscc.dla.mil
c. ADDRESS: Defense Supply Center Columbus, ATTN: DSCC-VAT, 3990 East Broad Street, Columbus, OH 43216-5000	**IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:** Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 DSN 289-2340